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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/905,052	07/12/2001	Hiroshi Samukawa	03310/018001	3451
22511	7590	01/10/2005	EXAMINER	
OSHA & MAY L.L.P. 1221 MCKINNEY STREET HOUSTON, TX 77010			UMEZ ERONINI, LYNETTE T	
			ART UNIT	PAPER NUMBER
			1765	

DATE MAILED: 01/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/905,052

Applicant(s)

SAMUKAWA, HIROSHI

Examin r

Lynette T. Umez-Eronini

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/24/2 3/5/4 7/9/4.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 1/24/2004, 3/5/2004, and 7/9/2004 has been considered by the examiner.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 9, 10, and 15-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 9, 10, and 15-18, "wherein the alkali compound comprises at least one selected from the group consisting of an alkali metal hydroxide and a quaternary ammonium hydroxide, wherein the etching solution does not comprise an amine compound" is indefinite because it is unclear how the etching solution comprises a quaternary ammonium hydroxide, which is an amine compound (See Specification, page 2, line 29 - page 3, line 2) as well as does not comprise an amine compound.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 9-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 6,218,022 B1), Li et al. (US 5,441,815), Hallden-Abberton et al (US 5,004,777) and/or Wilson et al. (US 4,369,090).

Suzuki teaches, "A resin etching solution containing . . . an alkali metal compound and water, or an aliphatic alcohol, an aliphatic amine, . . . and a process for etching a polyimide film . . ." (Abstract). "In addition, the alkali metal compound is most preferably potassium hydroxide . . . but other substances such as sodium hydroxide and lithium hydroxide may also be used, . . ." (column 3, lines 53-57). "Also, they may be used in concentrations of about 10-48% is preferred" (column 3, lines 57-64). "The resin etching solution . . . comprises a water-soluble amine (column 3, lines 25) . . . propylene glycol (same as applicant's diol) . . . they are used in a range of 1%-40%, and most preferably 5%-30% (column 4, lines 23-51). Table 2 (column 10, lines 33-43)

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lists the composition of potassium hydroxide and water having the same wt %. Hence, one can see that the concentration of the etchant components encompasses those of the claimed invention. Suzuki further teaches, "The etching temperature . . . is generally in the range of 20°C to the boiling point of the system, and preferably 30°C-90°C" (column 4, lines 1-4). Hence, the aforementioned reads on,

A method for etching a resin layer, comprising:

forming a film-like resin layer based on a polyimide;

providing a resist layer having an opening at a position on a surface of the resin layer; and

bringing an etching solution at 65 C or more in contact with the resin layer located at a bottom of the opening to etch the resin layer, wherein the etching solution comprises 3 to 65% by weight alcohol, 10 to 55% by weight alkali compound and water in a weight of 0.75 to 3.0 times a weight of the alkali compound, and wherein the alcohol comprises at least one selected from the group consisting of a diol containing from 3 to 6 carbon atoms and a triol containing from 4 to 6 carbon atoms, and wherein the alkali compound comprises at least one selected from the group consisting of an alkali metal hydroxide and a quaternary ammonium hydroxide **in claims 9, 10, 15, 16, 17, and 18**; and

forming a film-like resin layer comprises applying a coating solution, **in claims 13 and 14**.

Suzuki differs in failing to teach the etching solution does not comprise an amine compound, **in claims 9, 10, and 15-18**.

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Li teaches etching a polyimide resin film using KOH, H₂O, and ethanol, which may be replaced with polypropyl alcohol (an alcohol having more than one alcohol groups and which encompasses applicant's diol and triol having 3-6 carbon atoms), (column 4, line 59 – column 5, line 5) and etching a polyimide resin film at a fully imidized state (column 5, lines 15-20).

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Suzuki by etching a polyimide film with Li's etching solution that lacks an amine for the purpose of removing a producing a polyimide film which can be easily removed by conventional etching process with relatively low cost and high efficiency (Li, column 2, lines 5-9).

Suzuki in view of Li differ in failing to an imidation degree of less than 50%, **in claims 11 and 12**; and an imidation degree of from 50 to 98%, **in claims 9, 10, and 13-18**.

Hallden-Abberton illustrates that the degree of imidization can be controlled to obtain desired product characteristics (column 6, lines 10-45). A preferred range is from 25-95% (column 6, lines 18-20).

Wilson illustrates that the degree of imidation is proportional to the etch rate of the resin (column 6, lines 3-16).

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to select any specific range of imidation degrees of polyimide in the Suzuki and the Li reference, including applicant's specifically claimed range of

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imidation because the reference of Hallden-Abberton, suggests that the degree of imidization can be selected to obtain desired product characteristics. In addition, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select any degree of imidization that would provide a desired etch rate because the reference of Wilson illustrates that the degree of imidization is proportional to the etch rate of the resin.

It is noted that applicant's "imidation" is the same as "imidization" that is reference in the prior art of record.

Response to Arguments

7. Applicant's arguments with respect to claims 9-18 have been considered but are moot in view of the new ground(s) of rejection because the former prior art of record fails to teach "the etching solution does not comprise an amine compound," as recited in (Currently Amended) Claims 9, 10, and 15-18.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sasaki et al (US 4,473,523) illustrate a desirable insulator with 90% imidization (column 10, lines 38-44 and column 13, lines 5-11).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 7571-272-1470. The examiner is normally unavailable on the First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9310.

ltue

January 5, 2005

NADINE G. NORTON
SUPERVISORY PATENT EXAMINER
